AMENDMENTS TO THE CLAIMS

1. (cancelled)

2. (cancelled)

3. (cancelled)

4. (currently amended) ~~The method of Claim 3, wherein said step of measuring a spatial displacement includes the use of~~ A method of correcting measurement data obtained from a multi-channel imaging system, comprising the steps of:

a) producing a sub-image in each channel of the system using a predetermined wavelength;

b) dividing each sub-image produced by the system into a plurality of sub-regions;

c) measuring a geometric distortion introduced by the system in each sub-region of each sub-image by measuring a spatial displacement with respect to a predetermined reference position of an image feature in each sub-region of each sub-image produced by the system using a cross-correlation algorithm for each sub-region of each sub-image;

d) determining a correction factor corresponding to said geometric distortion introduced by the system in each sub-region of each sub-image by calculating correction factors as required to negate said spatial displacement in each sub-region of each sub-image produced by the system;

e) using said correction factor for each sub-region of each

sub-image to establish a correction coefficient for each sub-image pixel and to produce a corresponding geometric correction matrix for each sub-image; and

f) applying said geometric correction matrix to remove geometric distortion from measurement sub-images produced by the system.

5. (currently amended) The method of Claim [[3]]4, wherein a surface equation is fit through said correction factors and said correction coefficient is obtained from the surface equation.

6. (original) The method of Claim 5, wherein said surface equation is a polynomial.

7. (cancelled)

8. (currently amended) ~~The method of Claim 1,~~ A method of correcting measurement data obtained from a multi-channel imaging system, comprising the steps of:

a) producing a sub-image in each channel of the system using a predetermined wavelength;

b) measuring a geometric distortion introduced by the system in each sub-image;

c) determining a geometric correction matrix corresponding to said geometric distortion introduced by the system in each sub-image; and

d) applying said geometric correction matrix to remove

geometric distortion from measurement sub-images produced by the system;

wherein said geometric distortion is measured using one of said sub-images as a reference.

9. (currently amended) The method of Claim ~~1~~8, further including the step of repeating steps (a) through (c) using a different wavelength prior to carrying out step (d).

10. (currently amended) ~~The method of Claim 1, further including the following steps prior to carrying out step (d):~~ A method of correcting measurement data obtained from a multi-channel imaging system, comprising the steps of:

producing a sub-image in each channel of the system using a predetermined wavelength;

measuring a geometric distortion introduced by the system in each sub-image;

determining a geometric correction matrix corresponding to said geometric distortion introduced by the system in each sub-image;

measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-image;

determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels; ~~and~~

applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the

system; and

applying said geometric correction matrix to remove geometric distortion from measurement sub-images produced by the system.

11. (currently amended) ~~The method of Claim 2, further including the following steps prior to carrying out step (d):~~ A method of correcting measurement data obtained from a multi-channel imaging system, comprising the steps of:

a) producing a sub-image in each channel of the system using a predetermined wavelength;

b) dividing each sub-image produced by the system into a plurality of sub-regions;

c) measuring a geometric distortion introduced by the system in each sub-region of each sub-image;

d) determining a correction factor corresponding to said geometric distortion introduced by the system in each sub-region of each sub-image; and

e) using said correction factor for each sub-region of each sub-image to establish a correction coefficient for each sub-image pixel and to produce a corresponding geometric correction matrix for each sub-image;

f) measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-region of said sub-image;

g) determining a transfer-function correction matrix to produce a uniform intensity response across each of said

plurality of pixels in each sub-region of said sub-image; ~~and~~

h) applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system; and

i) applying said geometric correction matrix to remove geometric distortion from measurement sub-images produced by the system.

12. (cancelled)

13. (currently amended) The system of Claim ~~12~~18, wherein said measuring means includes:

means for dividing each sub-image produced by the system into a plurality of sub-regions;

means for measuring a geometric distortion introduced by the system in each sub-region of each sub-image;

means for determining a correction factor corresponding to said geometric distortion introduced by the system in each sub-region of each sub-image; and

means for using said correction factor for each sub-region of each sub-image to establish ~~calculate~~ a correction coefficient for each sub-image pixel and to produce a corresponding correction matrix for each sub-image.

14. (original) The system of Claim 13, wherein said measuring means further includes means for measuring a spatial displacement with respect to a predetermined reference position of an image

feature in each sub-region of each sub-image produced by the system; and said determining means includes means for calculating correction factors as required to negate said spatial displacement in each sub-region of each sub-image produced by the system.

15. (currently amended) The system of Claim ~~14~~18, further including means for fitting a surface equation through said correction factors and for obtaining said correction coefficient from the surface equation.

16. (original) The system of Claim 15, wherein said surface equation is a polynomial.

17. (cancelled)

18. (currently amended) ~~The system of Claim 12,~~ A multi-channel imaging system, comprising:

a) means for producing a sub-image in each channel of the system using a predetermined wavelength;

b) means for measuring a geometric distortion introduced by the system in each sub-image;

c) means for determining a geometric correction matrix corresponding to said geometric distortion introduced by the system in each sub-image; and

d) means for applying said geometric correction matrix to remove geometric distortion from measurement sub-images produced

by the system;

wherein said means for measuring said geometric distortion utilizes one of said sub-images as a reference.

19. (currently amended) The system of Claim ~~12~~18, further including means for changing said wavelength.

20. (currently amended) ~~The system of Claim 12, further including:~~ A multi-channel imaging system, comprising:

means for producing a sub-image in each channel of the system using a predetermined wavelength;

means for measuring a geometric distortion introduced by the system in each sub-image;

means for determining a geometric correction matrix corresponding to said geometric distortion introduced by the system in each sub-image;

means for applying said geometric correction matrix to remove geometric distortion from measurement sub-images produced by the system;

means for measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-image;

means for determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels; and

means for applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system.

21. (currently amended) ~~The system of Claim 13, further including~~ A multi-channel imaging system, comprising:

means for producing a sub-image in each channel of the system using a predetermined wavelength;

means for dividing each sub-image produced by the system into a plurality of sub-regions;

means for measuring a geometric distortion introduced by the system in each sub-region of each sub-image;

means for determining a correction factor corresponding to said geometric distortion introduced by the system in each sub-region of each sub-image;

means for using said correction factor for each sub-region of each sub-image to establish a correction coefficient for each sub-image pixel to produce a corresponding correction matrix for each sub-image;

means for measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-region of said sub-image;

means for determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels in each sub-region of said sub-image; ~~and~~

means for applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system; and

means for applying said geometric correction matrix to remove geometric distortion from measurement sub-images produced

by the system.

22. (original) A method of correcting measurement phase data obtained from a multi-channel interferometric imaging system, comprising the steps of:

a) producing a set of sub-images, each sub-image in said set corresponding to a channel of the system;

b) calculating a phase map from said set of sub-images;

c) repeating steps (a) and (b) a plurality of times, each time introducing a phase offset in said set of sub-images, thereby producing a plurality of additional phase maps;

(d) averaging said phase map and said additional plurality of phase maps to produce a corrected phase map.

23. (original) The method of Claim 22, wherein said phase offset is random.

24. (original) The method of Claim 22, wherein said phase offset is introduced in a reference path length.

25. (new) The method of Claim 4, further including the following steps:

measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-image;

determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels; and

applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system.

26. (new) The method of Claim 8, further including the following steps:

measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-image;

determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels; and

applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system.

27. (new) A method of correcting measurement data obtained from a multi-channel imaging system, comprising the steps of:

producing a sub-image in each channel of the system using a predetermined wavelength;

measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-image;

determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels; and

applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system.

28. (new) A method of correcting measurement data obtained from a multi-channel imaging system. comprising the steps of:

a) producing a sub-image in each channel of the system using a predetermined wavelength;

b) dividing each sub-image produced by the system into a plurality of sub-regions;

c) measuring an intensity distortion introduced by the system in a plurality of pixels in each sub-region of said sub-image;

d) determining a transfer-function correction matrix to produce a uniform intensity response across each of said plurality of pixels in each sub-region of said sub-image; and

e) applying said transfer-function correction matrix to remove intensity distortion from measurement sub-images produced by the system.